



PUBLIC HEALTH

**ALWAYS WORKING FOR A SAFER AND
HEALTHIER WASHINGTON**

Washington State Department of Health
School Indoor Air Quality
Washington State Board of Health

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Indoor Air Quality In Schools

“Children may be especially susceptible to air pollution. ...air quality in schools is of particular concern – proper maintenance of indoor air is more than a “quality” issue, it encompasses safety and stewardship of our investment in the students, staff, and facilities.”

Indoor Air Quality Tools for Schools
(Second Edition, Environmental Protection Agency)

School Environmental Health and Safety Indoor Air Quality

- Regulations and Guidance documents
- Training and Resources for schools and local health jurisdictions
- Basic Ventilation and IAQ issues
 - Operation and Maintenance
 - Carbon Dioxide
 - Particulates
 - Allergens and Asthma triggers
 - Mold

Indoor Air Quality Standards

State Building Code Council - Chapter 51-13 WAC Ventilation and IAQ

- Fresh Air
 - Classrooms: 15 cubic feet/minute/person
 - Offices / Labs: 20 cubic feet/minute/person

International Building Code Voluntary Design Standards Relating to Heating and Ventilation

- ASHRAE / American Society of Heating, Refrigeration and Air Conditioning Engineers
- ANSI / American National Standards Institute

Current Regulations - SBOH

- Chapter 246-366 WAC - Primary and Secondary Schools
 - All rooms used by students or staff shall be kept reasonably free of all objectionable odor, excessive heat, or condensation.
 - All sources producing air contaminants of public health importance shall be controlled by the provision and maintenance of local mechanical exhaust ventilation systems as approved by the health officer.

Other Guidance

- Environmental Protection Agency
 - *Tools for Schools*
 - *Design Tools for Schools*
 - *Mold Remediation in Schools and Commercial Buildings*
- *K-12 Health & Safety Guide*, DOH / OSPI January 2003
- *Indoor Air Quality Best Management Practices Manual for Schools*, DOH November 2003
- *Washington Sustainable Schools*, OSPI March 2004
- *Responding to Indoor Air Quality Concerns in our Schools*, DOH June 2005

Ventilation and Air Quality

- Ventilation and air conditioning systems re-circulate a significant portion of the indoor air to maintain comfort and reduce energy costs.
- Ventilation *reduces* exposure to pollutants
- Removing the source *eliminates* exposure
- Comfort Issues
 - Clean
 - Air flow
 - Temperature
 - Relative Humidity

Monitoring Fresh Air Supply

Carbon Dioxide

- Tool for assessing the supply of fresh air
- Outdoor air ~375 ppm CO₂
- Guideline - 700 ppm over ambient
- >~1000 ppm - sleepy, uncomfortable
- OSHA Occupational Limit - 5000 ppm
- Easy to monitor

Particulates

- Particulate matter
 - Dust, soot, aerosols, combustion by-products, fibers
- Particulates carry chemical contaminants
- Dust control is important for health and comfort.
- Fiberglass may irritate the skin, eyes, nose and throat. It can be released through damage to ceiling tiles or air duct lining.

Control of Allergens and Asthma Triggers

- Dust regularly with a damp micro-fiber cloth
- Vacuum using high-efficiency filters
- Use walk-off mats
- Limit animals in schools
- Reduce volatile organic compounds
- Practice green cleaning
- Use water based markers and paints
- Vent copy machines
- Apply Integrated Pest Management

Mold

- Control dampness and water
 - Design, build, and maintain buildings to prevent condensation and leaks
 - Monitor conditions inside buildings for moisture, water, and ventilation
- Remediate mold within 24 – 48 hours of developing water leaks or wet conditions
 - Replace porous materials
 - Clean non-porous materials
 - Follow established guidelines (EPA, NYC)

Indoor Air Quality in Schools

- Important for maintaining health and optimizing learning
- Regulatory standards set in building codes
- Guidelines and resources available

Guidance Documents

EPA / Indoor Air Quality in Schools

<http://www.epa.gov/iaq/schools/>

DOH / OSPI K-12 Health and Safety Guide

<http://www.k12.wa.us/SchFacilities/HealthSafetyGuide.aspx>

Washington Sustainable Schools Protocol

<http://www.k12.wa.us/SchFacilities/SustainableSchools.aspx>

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Nancy Bernard, MPH
School Environmental Health and Safety
Program